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<p>(21) International Application Number: PCT/US99/30843 (22) International Filing Date: 28 December 1999 (28.12.99)  (30) Priority Data: 60/115,403 8 January 1999 (08.01.99) US  (71) Applicant (for all designated States except US): VICAL INCORPORATED [US/US]; Suite 100, 9373 Towne Centre Drive, San Diego, CA 92121 (US).  (72) Inventors; and (75) Inventors/Applicants (for US only): PARKER, Suezanne [US/US]; 12539 Cypress Woods Court, San Diego, CA 92131 (US). HORTON, Holly [US/US]; 11791B Spruce Run Drive, San Diego, CA 92131 (US).  (74) Agents: STEFFE, Eric, K. et al.; Sterne, Kessler, Goldstein &amp; Fox P.L.L.C., Suite 600, 1100 New York Avenue, N.W., Washington, DC 20005-3934 (US).</p>		<p>(81) Designated States: CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>  (88) Date of publication of the international search report: 16 November 2000 (16.11.00)</p>
<p>(54) Title: TREATMENT OF VIRAL DISEASES USING AN INTERFERON OMEGA EXPRESSING POLYNUCLEOTIDE  (57) Abstract  The present invention provides a method of treating a viral disease comprising administering to a mammal a polynucleotide construct comprising a polynucleotide encoding IFN<math>\omega</math>. The polynucleotide construct of the present invention can be administered free from associated with transfection facilitating agents or as a complex with at least one or more cationic lipids.</p>		

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# INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 99/30843

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/20 A61K48/00 A61P31/12 A61P31/20

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, MEDLINE, BIOSIS, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>EP 0 170 204 A (BOEHRINGER INGELHEIM INT)                      5 February 1986 (1986-02-05)                      cited in the application                      page 3, line 6 -page 5, line 4                      page 12, line 15 - line 24                      page 34 -page 47; examples 1-5                      page 53 -page 58; example 8                      figure 11                      page 32, line 15 - line 24                      page 63, line 6 -page 64, line 15</p> <p style="text-align: center;">--- -/-</p>	1-32



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

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In: International Application No

PCT/US 99/30843

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>RAZ EYAL ET AL: "Systemic immunological effects of cytokine genes injected into skeletal muscle."            PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES,            vol. 90, no. 10, 1993, pages 4523-4527,            XP002144215            1993            ISSN: 0027-8424            page 4523, 'Introduction'            page 4525 - page 4526, 'Discussion'</p>	1-32
A	<p>WO 96 17063 A (VICAL INC)            6 June 1996 (1996-06-06)            page 4, line 18 - line 24            page 5, line 33 - line 36            page 40, line 4 - line 21</p>	19-23
A	<p>DATABASE BIOSIS 'Online!            BIOSCIENCES INFORMATION SERVICE,            PHILADELPHIA, PA, US; 1994            KOKOREVA L N ET AL: "Clinico-morphological characterization and effectiveness of interferon therapy in patients with chronic hepatitis delta."            Database accession no. PREV199497368940            XP002144216            abstract            &amp; ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII,            no. 1, 1994, pages 55-59,            ISSN: 0372-9311</p>	26
A	<p>DATABASE BIOSIS 'Online!            BIOSCIENCES INFORMATION SERVICE,            PHILADELPHIA, PA, US;            17 December 1998 (1998-12-17)            AULT A: "FDA approves two new hepatitis therapies."            Database accession no. PREV199900076805            XP002144217            abstract            &amp; LANCET (NORTH AMERICAN EDITION),            vol. 352, no. 9145,            17 December 1998 (1998-12-17), page 1996            ISSN: 0099-5355</p>	27-31

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/30843

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>           DATABASE BIOSIS 'Online!            BIOSCIENCES INFORMATION SERVICE,            PHILADELPHIA, PA, US;            October 1997 (1997-10)            HUANG CHIU-CHING: "Hepatitis in patients            with end-stage renal disease."            Database accession no. PREV199800049222            XP002144218            abstract            &amp; JOURNAL OF GASTROENTEROLOGY AND            HEPATOLOGY,            vol. 12, no. 9-10, October 1997 (1997-10),            pages S236-S241,            ISSN: 0815-9319            -----         </p>	27-31

# INTERNATIONAL SEARCH REPORT

Information on patent family members

In: International Application No

PCT/US 99/30843

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0170204	A	05-02-1986	DE 3428370 A	13-02-1986
			DE 3505060 A	14-08-1986
			AT 67786 T	15-10-1991
			AU 600653 B	23-08-1990
			AU 4554985 A	06-02-1986
			BG 60445 B	31-03-1995
			CA 1340184 A	15-12-1998
			DE 3584198 A	31-10-1991
			DK 346385 A	02-02-1986
			ES 545725 D	01-08-1986
			ES 8609475 A	16-12-1986
			ES 552431 D	01-09-1987
			ES 8708013 A	16-11-1987
			FI 852956 A,B,	02-02-1986
			GR 851866 A	02-12-1985
			HK 187896 A	18-10-1996
			HU 39477 A,B	29-09-1986
			IE 58942 B	01-12-1993
			IL 75963 A	25-05-1992
			JP 2566909 B	25-12-1996
			JP 61181381 A	14-08-1986
			JP 2567195 B	25-12-1996
			JP 6181771 A	05-07-1994
			KR 136799 B	25-04-1998
			MX 9203645 A	01-09-1992
			NO 177863 B	28-08-1995
			NZ 212937 A	27-08-1991
			PT 80901 A,B	01-09-1985
			SG 134394 G	13-01-1995
			SU 1523054 A	15-11-1989
			SU 1551251 A	15-03-1990
			ZA 8505759 A	29-04-1987
			SU 1572419 A	15-06-1990
WO 9617063	A	06-06-1996	US 5641665 A	24-06-1997
			EP 0795015 A	17-09-1997
			JP 10509877 T	29-09-1998